

**Practice: 490 - Tree/Shrub Site Preparation****Scenario: #1 - Ground Applied Herbicide, Forestland****Scenario Description:**

This practice involves the use of various herbicides applied using ground-based machinery in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, agricultural fields or forestland that was recently harvested. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition.

**Before Situation:**

Undesirable vegetation is present on the site including herbaceous plants and woody vegetation. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

**After Situation:**

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs.

**Scenario Feature Measure: Area of Treatment****Scenario Unit:** Acre**Scenario Typical Size:** 40**Scenario Cost:** \$2,978.38**Scenario Cost/Unit:** \$74.46**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.86	40	\$234.40
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.01	4	\$148.04
<b>Materials</b>						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$1.32	40	\$52.80
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$41.50	40	\$1,660.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	40	\$625.20
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$257.94	1	\$257.94

**Practice: 490 - Tree/Shrub Site Preparation****Scenario: #2 - Aerial Applied Herbicide, Forestland****Scenario Description:**

This practice involves the use of herbicides applied by helicopter in order to remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. This typical scenario includes open land such as abandoned fields, pastures or forestlands that were recently harvested. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition.

**Before Situation:**

Undesirable vegetation is present on the site including herbaceous plants and woody competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

**After Situation:**

Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size of the practice is 40 acres.

**Scenario Feature Measure: Area of Treatment****Scenario Unit:** Acre**Scenario Typical Size:** 40**Scenario Cost:** \$3,744.84**Scenario Cost/Unit:** \$93.62**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Chemical, aerial application, turn-key operation	1994	Turn-key chemical application performed by helicopter on forest only. Includes all cost of chemical application including equipment, mobilization, labor and material.	Acre	\$83.66	40	\$3,346.40
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$99.61	4	\$398.44

**Practice: 490 - Tree/Shrub Site Preparation****Scenario: #7 - Mow and Spray, NonForest****Scenario Description:**

This practice involves the use of a tractor pulling bush hog mower and band sprayed herbicide to clear above ground vegetation and target plants in order to improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, and agricultural fields. This following resource concerns: soil quality degradation - compaction, soil erosion - sheet and rill, and degraded plant condition - undesirable plant productivity and health and inadequate structure and composition.

**Before Situation:**

Undesirable vegetation is present on the site including herbaceous plants and sparse woody competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. Soils are compacted as a result of harvesting heavy equipment activities or other land uses.

**After Situation:**

Undesirable vegetation has been removed, thus enhancing the conditions for planting and survival of trees and/or shrubs. Soil compaction has been alleviated, allowing penetration of moisture and allowing roots to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs.

**Scenario Feature Measure: Area of Treatment****Scenario Unit:** Acre**Scenario Typical Size:** 40**Scenario Cost:** \$3,537.05**Scenario Cost/Unit:** \$88.43**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	\$51.24	25	\$1,281.00
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.86	24	\$140.64
<b>Labor</b>						
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.01	8	\$296.08
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$20.40	25	\$510.00
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.41	5	\$92.05
<b>Materials</b>						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$41.50	12	\$498.00
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	12	\$187.56
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$1.32	12	\$15.84
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$257.94	2	\$515.88

**Practice: 490 - Tree/Shrub Site Preparation****Scenario: #8 - Mow and Disk, NonForest****Scenario Description:**

This practice involves the use of light/moderate machinery to clear above ground vegetation and to also rip/cut/lift underground root systems in order to improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, and over grown agricultural fields. This following resource concerns: soil quality degradation - compaction, soil erosion - sheet and rill, and degraded plant condition - undesirable plant productivity and health and inadequate structure and composition.

**Before Situation:**

Undesirable vegetation is present on the site including herbaceous plants and sparse woody competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. Soils are compacted as a result of harvesting heavy equipment activities or other land uses.

**After Situation:**

Undesirable vegetation has been removed using a bush hog to knock down stand vegetation and heavy tillage equipment is used to breakup and lift root systems, breakup plow pans (<18" deep), thus enhancing the conditions for planting and survival of trees and/or shrubs. Soil compaction has been alleviated, allowing penetration of moisture and allowing roots to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size of the practice is 40 acres.

**Scenario Feature Measure:** Area of Treatment

**Scenario Unit:** Acre

**Scenario Typical Size:** 40

**Scenario Cost:** \$3,384.24

**Scenario Cost/Unit:** \$84.61

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	\$51.24	25	\$1,281.00
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	\$15.85	40	\$634.00
<b>Labor</b>						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$20.40	25	\$510.00
Supervisor or Manager	234	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hour	\$37.01	8	\$296.08
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.41	8	\$147.28
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$257.94	2	\$515.88

**Practice: 490 - Tree/Shrub Site Preparation****Scenario: #9 - Spray, Cross Rip ARRI****Scenario Description:**

Spray site with glyphosate product in the summer then mechanically treat proposed planting areas with 4 foot singleshank ripper using a D9 dozer or equivalent on an 8 foot by 8 foot cross section to reduce soil compaction on previously reclaimed mine lands to improve conditions for tree and/or shrub plantings. Cross ripping of sloped area is done on the contour to minimize erosion. This scenario reflects work being done through the Appalachian Regional Reforestation Initiative (ARRI) . [http://arri.osmre.gov/fra/advisories/fra\\_no.4.pdf](http://arri.osmre.gov/fra/advisories/fra_no.4.pdf)

**Before Situation:**

Open area has compacted soils and undesirable vegetation due to mine reclamation land shaping techniques that will negatively affect the survival and growth of newly planted trees and shrubs. This practice is used to reduce soil compaction and competing vegetation. Typical treatment area is 5 acres.

**After Situation:**

A previously mined site is sprayed with herbicide and cross ripped to alleviate compaction to allow the desired tree/shrub to be planted in the treated area. Resulting site is more conducive to tree/shrub growth because competition has been eliminated.

**Scenario Feature Measure:** Acreage treated

**Scenario Unit:** Acre

**Scenario Typical Size:** 5

**Scenario Cost:** \$2,913.25

**Scenario Cost/Unit:** \$582.65

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.86	5	\$29.30
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hour	\$188.08	8	\$1,504.64
<b>Labor</b>						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	\$99.61	4	\$398.44
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$22.84	8	\$182.72
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	\$18.41	12	\$220.92
<b>Materials</b>						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$1.32	5	\$6.60
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	\$15.63	5	\$78.15
<b>Mobilization</b>						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	\$492.48	1	\$492.48